



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,793	04/14/2004	Alfred Z. Abuhamad	229436-1 (553-1371US2)	4664
45436	7590	12/01/2010		
DEAN D. SMALL THE SMALL PATENT LAW GROUP LLP 225 S. MERAMEC, STE. 725T ST. LOUIS, MO 63105			EXAMINER COOK, CHRISTOPHER L.	
			ART UNIT 3737	PAPER NUMBER
			NOTIFICATION DATE 12/01/2010	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docket@splglaw.com

Office Action Summary

Application No.

10/823,793

Applicant(s)

ABUHAMAD, ALFRED Z.

Examiner

CHRISTOPHER COOK

Art Unit

3737

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ ~~Notes of Informal Patent Application~~
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings were received on 09/07/2010. These drawings are accepted.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 18 is rejected because the scope of the claim is unclear with respect to the limitation of "statistically based". The specific limitation of a "statistic" is not disclosed in the specification. Examiner notes that "statistically based" can encompass many things and if Applicant's intent is to cover statistics such as gestational age of a fetus, the dimensions of an organ or the presentation orientation of the fetus among other "statistics" then such a limitation could be considered new matter as "statistically based" is considered to be broader than the disclosed parameters.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 7 and 14-20 are rejected under 35 U.S.C. 102(b) as being anticipated by NPL "Fetal Heart Assessment Using Three-Dimensional Ultrasound" to *Nelson et al. "Nelson"*.

Regarding Claims 1-2, 7 and 14-20, *Nelson* discloses a system and a method implemented by a computer program product comprising instructions for enabling a computer to: acquire ultrasound data with a transducer for at least a portion of a body organ (fetal heart) (Page 1, "Introduction"); generate and define at least one other plane with respect to a reference plane for the body organ based on specific data including spatial positions within the organ that define a relationship of the at least one other plane to the reference plane (Pages 4-5, "Fetal Cardiac Data Visualization") and to display automatically and substantially simultaneously, at least two ultrasound images corresponding to at least of the reference plane and data defining the at least one other plane (Fig. 5). It should be noted that the generated planes are defined by a spatial mathematical relationship which relate the planes to one another by either a shift or rotation from the reference plane (i.e. 90°).

As for Claims 3-4, *Nelson* discloses a reference plane as the four-chamber view and wherein the at least one other plane comprises data defining a ductal arch view (Fig. 5)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 5-6 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over NPL "Fetal Heart Assessment Using Three-Dimensional Ultrasound" to *Nelson et al.* "*Nelson*" in view of U.S. Patent No. 7,244,233 to *Krantz et al.* "*Krantz*".

Regarding Claims 5-6 and 12, *Nelson* discloses a system with a computer program comprising instructions for enabling a computer to acquire a plurality of ultrasound image planes for organs as described above. However, *Nelson* is silent with respect to the specific limitation of the organ being a fetal head. Further, *Nelson* is silent with respect acquiring ultrasound images for each of the sagittal, transverse, and coronal planes.

Krantz teaches from within the same field of endeavor with respect to ultrasound imaging of a fetus, a computerized method wherein the head of a fetus is imaged (Column 3, Line 62-Column 4, Line 5). Furthermore, *Krantz* teaches it is considered a well know expedient in the art to obtain ultrasound images of the sagittal, transverse and coronal planes which would include the biparietal diameter (Column 10, Lines 26-36).

Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the computer program instructions as disclosed by *Nelson* to acquire and display ultrasound fetal head images acquired in the sagittal, transverse and coronal planes as described by *Krantz* in order to enhance and detect of fetal abnormalities using ultrasound.

With regard to Claim 13, Examiner contends the displaying disclosed by *Nelson* is displayed substantially in real time.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over NPL "Fetal Heart Assessment Using Three-Dimensional Ultrasound" to *Nelson et al.* "*Nelson*" in view of U.S. Patent No. 7,244,233 to *Krantz et al.* "*Krantz*" as applied to claim 5 above, and further in view of U.S. Patent No. 6,306,089 to *Coleman et al.* "*Coleman*".

Regarding Claim 6, *Nelson* in view of *Krantz* disclose a computer program product program comprising instructions for enabling a computer to acquire a plurality of ultrasound image planes for fetal organs as described above.

However, Nelson in view of *Krantz* are silent with respect to the specific limitation of wherein the reference plane is of the biparietal diameter.

Coleman teaches from within a similar field of endeavor with respect to fetal imaging wherein it is considered a well known expedient in the art to obtain an image plane to effectively measure the biparietal diameter of a fetus (Column 5, Lines 6-35).

Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the reference plane for imaging of a fetal organ as disclosed by *Nelson* in view of *Krantz* to include a reference plane which includes the biparietal diameter of the fetal head as described by *Coleman* in order to visualize vital organs of a fetus. Examine notes that such a modification requires nothing more than the mere combination of known prior art techniques when imaging the fetal head to yield predictable results, which has previously been held as unpatentable (see for precedent *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385).

10. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over NPL "Fetal Heart Assessment Using Three-Dimensional Ultrasound" to *Nelson et al.* "*Nelson*" in view of U.S. Patent No. 6,290,648 to *Kamiyama et al.* "*Kamiyama*" in further view of *Applicants Admission* of the prior art.

Regarding Claims 9-11, *Nelson* discloses a system with a computer program comprising instructions for enabling a computer to acquire a plurality of

ultrasound image planes for fetal organs as described above. *Nelson* is silent with respect to a computer program comprising image recognition software to facilitate the medical evaluation comprising steps to recognize a specific structure within an image, compare the structure with a reference image, and identify at least one of a normal and abnormal anatomical characteristic of the structure.

Kamiyama teaches an ultrasound diagnostic imaging apparatus (abstract) comprising image recognition software used to facilitate a medical evaluation (Column 7, Lines 58-67-Column 8, Lines 1-30). Furthermore, *Kamiyama* teaches wherein the software recognizes a specific structure within an image, compares the structure with a reference image, and identifies at least one of a normal and abnormal anatomical characteristic of the structure (Column 8, Lines 31-67).

Examiner further notes that Applicant has disclosed in the Specification, Paragraph [0067], *"One or more embodiments of the present invention can utilize, for example, standard (e.g. off-the-shelf) image recognition software to assess the level of the standardized planes and diagnose, or facilitate diagnosis..."*. Examiner notes that an "off-the-shelf" program is considered to be well known and commercially available prior to the claimed invention. Therefore, one of ordinary skill in the art would readily recognize a modification to include well known computer software program as disclosed by Applicant and *Kamiyama* to evaluate acquired image data.

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over NPL "Fetal Heart Assessment Using Three-Dimensional Ultrasound" to *Nelson et al.* "*Nelson*" in view of NPL "Sonography of the Normal Fetal Heart: A Practical Approach" to *Frates*.

Regarding Claim 21, *Nelson* discloses a computer program product comprising instructions for enabling a computer to acquire a plurality of ultrasound image planes for fetal organs as described above. However, *Nelson* is silent with respect to obtaining image data corresponding to a number of gestational weeks. Examiner notes that it is considered a well known expedient in the art to correlate image acquisition of fetal organs with data such as gestational weeks as described by *Frates* (Fig. 11 A-D) since the fetus position changes during fetal development.

12. Claims 1, 7 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,174,285 to *Clark* in view of NPL "Standardized Myocardial Segmentation and Nomenclature for Tomographic Imaging of the Heart: A Statement for Healthcare Professionals from the Cardiac Imaging Committee of the Council on Clinical Cardiology of the American Heart Association" to *Cerqueira et al.* "*Cerqueira*".

Regarding Claims 1, 7 and 14-17, *Clark* discloses a system and a computer program method comprising instructions for enabling a computer to: acquire ultrasound image data for at least a portion of a body organ (Column 1,

Lines 37-50; Column 2, Lines 25-38). *Clark* further discloses obtaining a 3D volume and displaying a plurality of views to a user which are automatically derived from the 3D data set (Column 3, Lines 35-47).

However, *Clark* is silent with respect to how the plurality of views are generated to define at least one other plane with respect to a reference plane for the body organ including spatial positions within the organ that define a relationship of the at least one other plane to the reference plane.

Cerqueira teaches an optimal approach for use in research and clinical patient management involving cardiac perfusion and function wherein at least one other plane is generated and defined with respect to a reference plane for the body organ which is based on specific data including spatial positions within the organ (Page 540 "Orientation of the Heart", "Recommendation", "Name for Cardiac Planes" and "Recommendation"). Examiner notes that by obtaining a "reference plane" (i.e. "apical 4-chamber echocardiographic view"), *Cerqueira* also approximates the horizontal long-axis view (i.e. "standardized plane").

Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the computer program as disclosed by *Clark* to generate and define at least one other imaging plane with respect to a reference plane as described by *Cerqueira* in order to accurately define and display other planes with respect to the reference plane in an acquired 3D volume to visualize views which cannot be directly imaged by 2-D imaging systems. Such a modification requires nothing more than the mere

combination of known prior art techniques to yield predictable results, which has previously been held as unpatentable (see for precedent *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385).

13. Claims 2-4 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,174,285 to *Clark* in view of NPL "Standardized Myocardial Segmentation and Nomenclature for Tomographic Imaging of the Heart: A Statement for Healthcare Professionals from the Cardiac Imaging Committee of the Council on Clinical Cardiology of the American Heart Association" to *Cerqueira et al.* "*Cerqueira*" as applied to claim 1 above, and further in view of NPL "Fetal Heart Assessment Using Three-Dimensional Ultrasound" to *Nelson et al.* "*Nelson*".

Regarding Claim 2, *Clark* in view of *Cerqueira* disclose a computer program product comprising instructions for enabling a computer to acquire a plurality of ultrasound image planes for an organ (heart) as described above.

However, *Clark* in view of *Cerqueira* do not expressly disclose wherein the body organ is a fetal heart.

Nelson discloses a system and a method implemented by a computer program product comprising instructions for enabling a computer to: acquire ultrasound data with a transducer for at least a portion of a body organ (fetal heart) (Page 1, "Introduction).

Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the computer program as

described by *Clark* in view of *Cerqueira* to be used to perform it on a fetal heart as described by *Nelson* in order to accurately visualize a vital organ of a fetus.

As for Claims 3-4, *Nelson* discloses a reference plane as the four-chamber view and wherein the at least one other plane comprises data defining a ductal arch view (Fig. 5)

As for Claims 18-20, *Nelson* also discloses generating and defining at least one other plane with respect to a reference plane for the body organ based on specific data including spatial positions within the organ that define a relationship of the at least one other plane to the reference plane (Pages 4-5, "Fetal Cardiac Data Visualization") and to display automatically and substantially simultaneously, at least two ultrasound images corresponding to at least of the reference plane and data defining the at least one other plane (Fig. 5). It should be noted that the generated planes are defined by a spatial mathematical relationship which relate the planes to one another by either a shift or rotation from the reference plane (i.e. 90°).

14. Claims 5-6 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,174,285 to *Clark* in view of NPL "Standardized Myocardial Segmentation and Nomenclature for Tomographic Imaging of the Heart: A Statement for Healthcare Professionals from the Cardiac Imaging Committee of the Council on Clinical Cardiology of the American Heart Association" to *Cerqueira et al. "Cerqueira"*

as applied to claim 1 above, and in further view of U.S. Patent No. 7,244,233 to *Krantz et al. "Krantz"*.

Regarding Claims 5-6 and 12, *Clark* in view of *Cerqueira* discloses a system with a computer program comprising instructions for enabling a computer to acquire a plurality of ultrasound image planes for organs as described above. However, *Clark* in view of *Cerqueira* is silent with respect to the specific limitation of the organ being a fetal head. Further, *Clark* in view of *Cerqueira* is silent with respect acquiring ultrasound images for each of the sagittal, transverse, and coronal planes.

Krantz teaches from within the same field of endeavor with respect to ultrasound imaging of a fetus, a computerized method wherein the head of a fetus is imaged (Column 3, Line 62-Column 4, Line 5). Furthermore, *Krantz* teaches it is considered a well know expedient in the art to obtain ultrasound images of the sagittal, transverse and coronal planes which would include the biparietal diameter (Column 10, Lines 26-36).

Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the computer program instructions as disclosed by *Clark* in view of *Cerqueira* to acquire and display ultrasound fetal head images acquired in the sagittal, transverse and coronal planes as described by *Krantz* in order to enhance and detect of fetal abnormalities using ultrasound.

With regard to Claim 13, *Clark* discloses wherein the display is "real-time" (Column 2, Lines 21-23).

15. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,174,285 to *Clark* in view of NPL "Standardized Myocardial Segmentation and Nomenclature for Tomographic Imaging of the Heart: A Statement for Healthcare Professionals from the Cardiac Imaging Committee of the Council on Clinical Cardiology of the American Heart Association" to *Cerqueira et al. "Cerqueira"* as applied to claim 1 above, and in view of in view of U.S. Patent No. 6,290,648 to *Kamiyama et al. "Kamiyama"* in further view of *Applicants Admission* of the prior art.

Regarding Claims 9-11, *Clark* in view of *Cerqueira* discloses a system with a computer program comprising instructions for enabling a computer to acquire a plurality of ultrasound image planes for fetal organs as described above. *Clark* in view of *Cerqueira* is silent with respect to a computer program comprising image recognition software to facilitate the medical evaluation comprising steps to recognize a specific structure within an image, compare the structure with a reference image, and identify at least one of a normal and abnormal anatomical characteristic of the structure.

Kamiyama teaches an ultrasound diagnostic imaging apparatus (abstract) comprising image recognition software used to facilitate a medical evaluation (Column 7, Lines 58-67-Column 8, Lines 1-30). Furthermore, *Kamiyama* teaches wherein the software recognizes a specific structure within an image, compares

the structure with a reference image, and identifies at least one of a normal and abnormal anatomical characteristic of the structure (Column 8, Lines 31-67).

Examiner further notes that Applicant has disclosed in the Specification, Paragraph [0067], "*One or more embodiments of the present invention can utilize, for example, standard (e.g. off-the-shelf) image recognition software to assess the level of the standardized planes and diagnose, or facilitate diagnosis...*". Examiner notes that an "off-the-shelf" program is considered to be well known and commercially available prior to the claimed invention. Therefore, one of ordinary skill in the art would readily recognize a modification to include well known computer software program as disclosed by Applicant and *Kamiyama* to evaluate acquired image data.

16. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,174,285 to *Clark* in view of NPL "Standardized Myocardial Segmentation and Nomenclature for Tomographic Imaging of the Heart: A Statement for Healthcare Professionals from the Cardiac Imaging Committee of the Council on Clinical Cardiology of the American Heart Association" to *Cerqueira et al. "Cerqueira"* as applied to claim 1 above, and in view of in view of NPL "Sonography of the Normal Fetal Heart: A Practical Approach" to *Frates*.

Regarding Claim 21, *Clark* in view of *Cerqueira* discloses a computer program product comprising instructions for enabling a computer to acquire a plurality of ultrasound image planes for fetal organs as described above.

However, *Nelson* is silent with respect to obtaining image data corresponding to a number of gestational weeks. Examiner notes that it is considered a well known expedient in the art to correlate image acquisition of fetal organs with data such as gestational weeks as described by *Frates* (Fig. 11 A-D) since the fetus position changes during fetal development.

Response to Arguments

Applicant's arguments filed 09/07/2010 have been fully considered but they are not persuasive. In particular, Applicant has argued that "...*body organ specific data including spatial positions for generating at least one other plane are not disclosed in the cited references*". Furthermore, Applicant has argued that the cited references fail to use "...*body organ specific data to define relationships between image planes*" and that "*Geometric relationships are not relationships based on body organ specific data including spatial positions within the organ*". Examiner respectfully disagrees. As stated in the above rejection, *Nelson* discloses a system and a method implemented by a computer program product comprising instructions for enabling a computer to: acquire ultrasound data with a transducer for at least a portion of a body organ (fetal heart) (Page 1, "Introduction"); generate and define at least one other plane with respect to a reference plane for the body organ based on specific data including spatial positions within the organ that define a relationship of the at least one other plane to the reference plane (Pages 4-5, "Fetal Cardiac Data Visualization") and to display automatically and substantially simultaneously, at least two ultrasound images

corresponding to at least of the reference plane and data defining the at least one other plane (Fig. 5). It should be noted that the generated planes are defined by a spatial mathematical relationship which relate the planes to one another by either a shift or rotation from the reference plane (i.e. 90°). Examiner notes that *Nelson* discloses wherein a medical professional obtains a 2-D reference plane that is referenced to the spine or sternum. It is this reference that provides or defines the primary axis from which at least two other orthogonal scan planes are defined and generated by the software. In the alternative, the first orthogonal in the set may also be considered to be a reference plane obtained secondarily so as to define the remaining two. In either case, *Nelson* makes it clear that the arrow or cross-hatch within the orthogonal view set serves as the "spatial position or positions" called for in the claim in its broadest reasonable interpretation. This "spatial position" set is effectively a target placed by the physician to reveal "organ specific" features of the fetal heart by placement within a heart substructure of interest, whereupon it may be fairly labeled as "organ specific data" that then serves to define the relationship of the two other orthogonal scan planes. Moreover, any of these planes may be termed "standardized" within the meaning of multi-planar orthogonality as a format since they represent a customary and well defined inter-relationship. Further, the four view display in Fig. 5 displays the reference frame (under either above interpretations) as well as the remaining image pair to the orthogonality in real-time and therefore are displayed at least simultaneously enough for the interactive sense. Examiner notes that the display itself is understood to be an automatic function by the system visualization software once the precedent interaction

as occurred. Furthermore, the technique disclosed by *Cerqueira* is within the same field of endeavor and would provide similar results.

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **CHRISTOPHER COOK** whose telephone number is (571)270-7373. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571)272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. C./
Examiner, Art Unit 3737

/Ruth S. Smith/
Primary Examiner, Art Unit 3737